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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,630	06/28/2001	Seigi Aoyama	3008-28	4486

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EXAMINER	
DINH, TUAN T	

ART UNIT	PAPER NUMBER
2841	

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

A

Office Action Summary	Application No.	Applicant(s)	
	09/892,630	AOYAMA ET AL.	
	Examiner	Art Unit	
	Tuan T. Dinh	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,4,5,7,14-22 and 24-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *17* is/are allowed.

6)☒ Claim(s) *2,4,5,7,14-16,18-22 and 24-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Note of claim language:

The term of "is capable of", which defined as a "configured to" or "adapted to" as intended use and performing a function is not a positive limitation, but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. In re Hutchison, 69 USPQ 138.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 2, 4-5, 7, 14-16, and 18-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification *is lack of support* the limitations of "said alloy composition is capable of soldering a metallic material ***with no oxide film*** on its surface". Since in the Remark at the last paragraph on page 8, the applicant said that limitations do disclose on page 11, line 17-21, and page 2-4. However, nothing on page 11 do disclose that limitation, and further on page 12 start at lines 2-4, the specification described

"constituting the plating (the alloy composition) ***is less likely to form an oxide layer*** (or film) and can be connected, with good bonding strength, to a silver plate portion (16), which is a metallic material. So the applicant is described the plating is less likely to form the oxide layer (film), but still form the oxide film on its surface. Hence, there is nowhere in page 2, lines 17-21 through page 3, lines 2-4 do described "said alloy composition is capable of soldering a metallic material ***with no oxide film*** on its surface." Because the term "less likely to form an oxide layer", which is not meaning of "no oxide layer" Therefore, the applicant is constructed a new subject matter, which is not described and support in the specification.

Examiner suggests applicant to clarify that limitations as explained as above.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 2, 14-16, 19-20, 22, 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Domi et al. (U.S. Patent 6,319,461)

Regarding claims 2, 15-16, 20, and 22, Domi discloses a lead free solder alloy (see an abstract) comprising:

an alloy composition containing: 0.002-0.015% by mass of phosphorus (P<1.0 % weight, see column 2, lines 49-52) with the balance consisting of tin (column 3, line 37), wherein bismuth (Bi), antimony, and gallium are not added to the alloy composition, and the alloy composition excluded bismuth, gallium, antimony, and titanium, and said alloy ***is capable of*** (see note of claim language) soldering a metallic material.

Note: in column 2, lines 23-24, and 49-52, Domi discloses in a present invention of one of a preferably embodiment containing at least 0.0001% by weight of O, and further contains a weight of P, which is less than 1%. Therefore, the lead free solder is excluded titanium in the alloy composition.

Regarding claims 14 and 19, Domi discloses the alloy composition further comprising: 2.0-5.0% by mass of silver (column 2, lines 27-29); and 0.01-2.0% by mass of copper (column 2, lines 30-32).

As to claim 26, Domi discloses a lead-free solder, comprising: an alloy composition that contains 0.002 to 0.015% by mass of phosphorus with a balance consisting of tin, and that is bismuth, antimony, gallium and titanium free.

Note: in column 2, lines 23-24, and 49-52, Domi discloses in a present invention of the one of the preferably containing at least 0.0001% by weight of O, and further contains a weight of P, which is less than 1%. Therefore, the lead free solder is excluded titanium in the alloy composition.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 4-5, 7, 18 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Kenji et al (hereafter PA, figures 1 and 2 submitted by applicant) in view of Domi et al. (U.S. Patent 6,19,4613).

Kenji discloses a connection lead as shown in figures 1-2 comprising:

a copper strip (1) or other strip conductor; and

a plating (2a, 2b) provide on at least one side of the strip conductor, said plating being formed of a lead-free solder composed mainly of tin, and has a shape such that the plating in a widthwise direction of the strip conductor having a bulge formed of an arc, a triangle, or stairs as viewed in section with an apex being located at a proper position in the widthwise direction of the strip conductor.

Kenji does not show said plating containing 0.002 to 0.015% by mass of phosphorus, 2.0-5.0% by mass of silver, 0.01-2.0% by mass of copper, with the balance consisting of tin excluding bismuth, antimony, gallium, and titanium.

Domi teaches an alloy composition containing 0.002 to 0.015% by mass of phosphorus, 2.0-5.0% by mass of silver, 0.01-2.0% by mass of copper, and balance of tin, the alloy excluding bismuth, an antimony, gallium, and titanium (see explanation in

claim 2), the alloy ***is capable of*** (see note of claim language) soldering a metallic material.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have teaching's Domi employed in the connection lead of PA for the purpose of improving a thermal fatigue characteristic of a solder alloy, and a thermal and electrical conductivity connection.

7. Claims 24-25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Domi ('461) in view of Prior Art (figures 6-7,and part of figure 5 (the thickness of the plating of the conventional EX.), submitted by applicant).

Domi discloses a lead-free solder, comprising: an alloy composition containing 0.002 to 0.015% by mass of phosphorus with the balance consisting of tin; the alloy composition is bismuth, antimony, gallium and titanium free, see portion #4 in this Office action; wherein said alloy ***composition is capable of*** generating on its surface an oxide film.

Domi discloses the property of the alloy composition having mass of Cu, silver, and P falls in a range of the temperature between 250-350 of C degrees (the alloy is required from 200-350, but not more than 350 of C degrees because to prevent influences on electronic parts or components such as heat distortion), but do not specific show a thickness of the composition is less than 6 um.

Figure 5 shows a conventional invention (figures 6-7) that discloses a thickness of the alloy less than 6 um in a range of less than 250 to 350 degrees centigrade.

Since the thickness is not a specific subject matter of the invention. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the thickness of the Prior Art employed the thickness of Domi in order to reduce size of the solder for excellent bonding when applied in a high temperature.

Allowable Subject Matter

8. Claim 17 is allowed.

The following is an examiner's statement of reasons for allowance: the references cited do not teach or render obvious in combination of ***an alloy composition consisting of***: 0.002-0.015% by mass of phosphorus (P); 2.0-5.0% by mass of silver (Ag); 0.01-2.0% by mass of copper (Cu); and tin.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

9. Applicant's arguments with respect to claims 2, 4-5, 7, and 14-22 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues:

(1) Domi does not disclose an alloy excluding titanium (Ti), see in Remark filed on 01/04/06, page 7, lines 19-20.

Examiner disagrees because as disclosed in column 2, lines 23-24, and 49-52 of the Domi reference, Domi discloses in a present invention preferably contain at least 0.0001% by weight of O, and further contains a weight of P, which is less than 1%. Therefore, the lead free solder ***does not include titanium or the alloy is excluded titanium in the alloy composition***.

(2) Domi further in column 2, lines 33-35, 62 through column 3, line 7 that the alloy always includes Ti.

Examiner disagrees because, column 2, lines 27-52, the Domi reference, discloses the alloy being applied in many preferably embodiments. So that in one of the embodiments of the alloy as shown in column 2, lines 49-52, that is excluded the Ti. In column 2, line 62 through column 3, line 7 that disclosed an optional of the alloy by adding Ti to be easy oxidized, but it is clearly shown in a different embodiment and not disclosed in the one of the alloy not containing Ti as disclosed in column 2, lines 49-52.

Thus, the examiner believes the rejection is proper.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Dinh
March 08, 2006.

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SUPERVISORY PATENT EXAMINER
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